

US Application No. 10/036,999

ATTY DOCKET NO. 10992125-2

Page 7

Remarks

The examiner is thanked for the Office Action mailed 06/05/2003 (request for a 1-month extension of time to respond, enclosed). As a preliminary matter it is noted that the Office Action Summary indicates in paragraph 6 that claims 1-17 were rejected although paragraph 4a indicates that claims 12-17 were withdrawn from consideration. Given that grounds for rejection were advanced only in connection with claims 1-11, it is assumed that only claims 1-11 are rejected in the Office Action and that the indication in paragraph 6 of the Office Action Summary is in error.

Claim 1 has been amended to limit the claim to requiring "decreasing power of the interrogating light for a first site on the array package during the scanning wherein the first site is outside an area occupied by the array". This is described, for example, on page 8, line 31 to page 9, line 7. Claim 5 has been amended to incorporate limitations of claim 1 and claim 6 (and claim 6 has been canceled). Claim 5 has further been amended to correct an arguable ambiguity to make it clearer that it is the "altering" that occurs when the interrogating light initially illuminates the first site. Such a dynamic adjustment at a site is discussed, for example, on page 13, lines 10-21. New claim 18 incorporates limitations of claim 1 as well as requiring "the interrogating light power is altered during a row scan of the interrogating light". Such a feature is described, for example, on page 12, lines 26-31.

The rejections of claims 1-11 are now discussed in sequence. References to Paragraphs are to those numbered paragraphs of the Office Action unless otherwise indicated.

In Paragraph 3, the examiner rejected claims 1-11 under 35 U.S.C. 112, second paragraph for lack of antecedent basis in claim 1, step (c) for "the interrogating light power", "the array scan", and "the emitted signal...outside a predetermined range" (the examiner questioned if this was intensity or some other range). The examiner's suggestions for amending the claim language has been adopted with respect to the first two of the foregoing phrases since they are equivalent to the language previously in the claims. With regard to the last phrase relating to

US Application No. 10/036,999

ATTY DOCKET NO. 10992125-2

Page 8

“predetermined range”, while the examiner’s position is disagreed with, that phrase has already been canceled from claim 1 for other reasons.

The examiner next rejected claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over Bengtsson (U.S. Patent No. 6,078,390) in view of Rava et al. (U.S. Patent No. 5,874,219). This rejection is traversed on the basis that even if the references were combined as the examiner suggests, the claimed invention is still not obtained in the resulting combination as explained below.

In particular, the examiner relies on Bengtsson for most of the claimed features (other than the microarray including an addressable array of multiple features of different moieties, for which the examiner relies on Rava et al.). The examiner refers to column 6, line 1 to column 7, line 60 of Bengtsson. Referring to the foregoing lines, Bengtsson first conducts a low resolution scan over the entire array to locate the array, using a “first set” (i.e. constant) of attenuation and detection settings (column 6, lines 1-13). This positioning scan can optionally be omitted (column 6, lines 39-43). The user then selects a “calibration area” (column 6, lines 23-29). A line of pixels are then scanned and if N pixels (for example, 2 to 8 pixels) are found to be saturated then light power is attenuated or detector gain decreased by a fixed amount (e.g. by a factor of 2)(see column 7, line 44 to column 8, line 9; column 2, lines 22-61), and the same line re-scanned with the new settings. The same line is re-scanned iteratively and, “As necessary the system again automatically and iteratively adjusts the levels of attenuations and gain by the predetermined factors until fewer than N adjacent pixels produce saturated signals” (column 7, lines 5-9). A number of lines are skipped (e.g. only every 4th line) and this procedure is then repeated for the next scanned line. The result is a low-resolution calibration scan (column 2, lines 9-14; column 7, lines 10-20). Settings for light power and detector gain are then determined from this low resolution scan and these calibration settings are then used to scan the entire array to collect data (column 2, lines 14-18; column 7, lines 31-43).

Claim 1 as amended requires “decreasing power of the interrogating light for a first site on the array package during the scanning wherein the first site is outside an area occupied by the array”. Nothing in Bengtsson discloses or suggests anything regarding decreasing interrogating light power at a site which is outside an area

US Application No. 10/036,999

ATTY DOCKET NO. 10992125-2
Page 9

occupied by the array. Accordingly, the rejection of claim 1 as amended should now be withdrawn.

Claim 5 as amended now more clearly recites "wherein the interrogating light power is altered based on the signal emitted from the first site, when the interrogating light initially illuminates the first site" wherein the first site is a feature. That is, it is the altering which occurs when the interrogating light initially contacts the feature. Such altering allows power to be corrected before the interrogating light contacts the remainder of the feature so that useful data can still be obtained from that feature. Nothing in Bengtsson discloses or suggests this type of "dynamic" adjustment. Accordingly, the rejection of claim 5 as amended should now be withdrawn.

With regard to claim 7, this claim requires:

"(a) calibrating an interrogating light power versus a control signal characteristic, from a light system which provides the interrogating light of a power which varies in response to the control signal characteristic;"

While, as described above, Bengtsson does indeed perform a "calibration" step during a pre-scan, this is a determination of the power or detector gain that should be used for a subsequent main scan. There is no disclosure or suggestion of "calibrating an interrogating light power versus a control signal characteristic" where the light power varies "in response to the control signal characteristic". An example of this in the present application is the calibration of the EOM 110 (FIG. 5) transmission in response to the high voltage controlling the EOM, as described on page 12, lines 5-25. Bengtsson does disclose using a variable optical attenuator responsive to a control signal. However, nowhere in column 6, line 1 to column 7, line 60, as cited by the examiner, nor elsewhere in Bengtsson, is there disclosed or suggested a calibration of interrogating light power versus the control signal which varies that interrogating light power. As mentioned above, the only "calibration" is the setting of the illumination power (and hence control signal) in response to measured signals from the array during a pre-scan. Accordingly, for this reason alone the rejection of claim 7 (and 8-11 dependent thereon) should be withdrawn.

In addition to the foregoing, even if the calibrating of Bengtsson was a "calibrating" of paragraph (a) of claim 7 (which it is not), paragraph (b) of claim 7

US Application No. 10/036,999

ATTY DOCKET NO. 10992125-2

Page 10

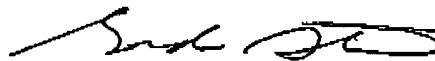
requires a separate "scanning" procedure which "follows" (i.e. is after) the calibrating of paragraph (a). At the same time paragraph (d) of claim 7 requires altering the interrogating light power during the "scanning" (i.e. during the separate scanning of paragraph (b), not during the "calibrating" of paragraph (a)). As discussed above, while Bengtsson does disclose altering interrogating light power during a "calibration" procedure, there is no disclosure or suggestion to such an altering during the subsequent scanning procedure. For this additional reason, this rejection of claim 7 (and 8-11) should be withdrawn.

New claim 18 requires "the interrogating light power is altered during a row scan of the interrogating light". As pointed out above, during the pre-scan Bengtsson alters the interrogating light power after a scan of a row and either re-scans the same line with a different power (or detector gain) setting, or moves onto the next row and repeats the iterative procedure of re-scanning a row then after the row scan re-setting power or gain as needed. Nothing in Bengtsson discloses nor suggests altering the interrogating light power during a row scan. Accordingly, claim 18 (and claims 2-4, 19, 20 which are now dependent thereon) should be allowable.

The examiner further rejected claims 1-11 based on obviousness-type double patenting over claims 1-14 of U.S. Patent No. 6,406,849. A Terminal Disclaimer in relation to that patent is enclosed.

In view of the above, claims 1-5, 7-11, and 18-20 should now be in condition for allowance. If the examiner is of the view that there are any outstanding issues, she is invited to call Gordon Stewart at (650)485-2386.

Respectfully submitted,



Gordon M. Stewart
Attorney for Applicants
Reg. No. 30,528

Agilent Technologies, Inc.
Legal Department, DL429
IP Administration
P.O. Box 7599
Loveland, CO 80537-0599

10992125-2 First Response 10-06-03